Software Requirements Specification

Wildlife Areas Habitat Conservation Plan

Species Habitat Management Application

Version 1.6
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FINAL

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Document Revision History

Version	Date	Description
0.0	5/15/07	Document Template Created.
1.1	5/17/07	First Draft Development
1.2		
1.3		
1.4	6/3/07	WADFW Comments/Edits
1.5	6/6/07	Update Draft with Conference Call Comments
1.6	7/25/07	SRS review Meeting/Final Draft

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1. Introduction

1.1. Purpose

This Software Requirements Specification (SRS) describes the functional and nonfunctional requirements for Release 1.0 of the Habitat Conservation Plan's (HCP) Species Habitat Management Application. Members of the project team that will implement and verify correct functioning of the system will use this document as a guide. Unless otherwise noted all requirements specified here are Mandatory and committed for Release 1.0.

1.2. Project Scope

As part of the Habitat Conservation Plan development, this phase of the project activity focuses on the development and implementation of a species habitat management application. This application is needed by the WDFW to ensure consistent collection and management of species habitat information associated with the HCP process. The application will utilize a standardized database schema and an easy to use interface for the collection of habitat activity data. This project represents the second phase of a series of applications and databases designed to interact with the HCP database model.

2. Overall Description

2.1. Product Perspective

The product developed will provide additional functionality working within the ArcMap environment allowing the user to query, create, edit, import and attribute species habitat features and tabular records.

The product will simplify and standardize the data management and maintenance associated with Species Habitat information. The goal is to provide a system where necessary information can be easily captured for use in future HCP related analysis.

2.2. Product Features

The main tasks the system will perform are to:

- Standardize the collection of Species Habitat Information in a single enterprise database (Mandatory)
- Allow the easy collection of the Species Habitat data (Mandatory)
- Help standardize data collection, management, and data entry (Mandatory)
- Create, Modify, Import, Delete Species Habitat features (Mandatory)
- Create New Species Habitat Classes (Mandatory)
- Compatible with Activities Habitat Database Model (Mandatory)
- Standardize projection system (Mandatory)
- Minimal attribution by user - Auto Populating Data (Mandatory)
- Feature class editing - Point, Line, Polygon (Mandatory)
- Link Species Habitat records with other Species Habitat features (Mandatory)
- Track Species Profiles (Mandatory)
- Easy navigation for the User (Mandatory)
- Define Species Habitat without mapping (unmapped Species Habitat records) (Mandatory)
- Report if Species Habitat records are complete (Mandatory)
- Disconnected editing environment - Data export processes (Mandatory)
- User Auditing at Feature Level - Attribute level and historical Geodatabase tables (Highly Desirable)
- Search functionality - Attribute, Location (Highly Desirable)
- Analysis done by WDFW regions (Highly Desirable)
- Lookup tables for easy data entry (Highly Desirable)
- Export to Excel spreadsheets (Highly Desirable)

2.3. User Classes and Characteristics

User Class	Characteristics
GIS novices (favored)	This category of users is the most prominent in the Regions based on the interview results. The HCP Species Habitat Management Application will need to consider the limited GIS training and experience of these users.
GIS professionals	Although the application will be mainly designed for the GIS novices, it will also need to allow the GIS professionals in these Regions to utilize their knowledge and GIS skills without being constrained by the HCP Species Habitat Application functionalities.

2.4. Operating Environment

OE-1 The software application developed shall reside on the DFW desktop and Laptop computers of the application's primary users.

OE-2 The system input data shall reside in the DFW SQL (SQL Server) database environment and in a detached user (ACCESS) database environment.

OE-3 The system shall operate within and be compatible with the DFW network environment.

OE-4 The system shall be compatible with the current DFW minimum desktop configuration hardware and software standards, as defined below:

Environment	**Standards**
Desktop Operating System:	Microsoft Windows 2000 SP4 or XP
Directory Services:	LDAP
GIS:	ArcGIS 9.2, Service Pack 2
GIS License:	ArcView
Disconnected Database Types:	Personal (MS Access)
Email:	Groupwise (Outlook soon)
Office Applications:	Microsoft Office (2000)
ArcSDE:	ArcSDE 9.1 (ArcSDE 9.2 soon)
SQL Server Version	2000 (Migrating to 2005 soon)

2.5. Design and Implementation Constraints

CO-1 The system shall be developed in ArcGIS 9.2 and available as an extension on the DFW network.

CO-2 The system shall be developed using VB.NET for .NET 2.0 framework with Windows user interfaces.

CO- 3 Application development will adhere to the model-view-controller architectural pattern. This pattern serves to separate data (model) and user interface (view) concerns, so that changes to the user interface do not affect the data handling, and that the data can be reorganized without changing the user interface. Adhering to the model-view-controller pattern will decouple data access and business logic from data presentation and user interaction, by introducing an intermediate component: the controller.

CO- 4 Variables will be created using camel case (creating compound words or phrases in which the words are joined without spaces and are capitalized within the compound with the first letter of the variable lowercase).

CO- 5 Variables referencing ArcObjects com classes, interfaces, or objects will not be abbreviated and will be dimensioned using a camel case naming convention. Do not use pointers such as m_p or g_p as a prefix to ArcObjects classes/interfaces.

CO- 6 Do not use prefixes to variables such as int, str, lng, etc.

CO-7 In-line documentation for coding, flow chart and/or diagram – what each module does, who did it and when it was done

CO-8 Methods, procedures and functions will be sufficiently commented to support maintenance programmers with easily understanding the logic and purpose of the routines.

CO- 9 Once delivered, code will to be managed through WDFW's CVS repository.

2.6. User Documentation and Technical Support

UD-1 The user documentation (Help and Tutorial) shall be available as a separate electronic document (PDF) which can be opened from within the system.

UD- 2 The user documentation will use screen captures of application interfaces to illustrate methods and procedures.

2.7. Assumptions and Dependencies

AD-1 The Department of Fish and Wildlife shall provide leadership and support to successfully implement the HCP Species Habitat Management Tool in the department.

AD-2 The users of the HCP Species Habitat Management Tool shall have basic knowledge/training of ArcGIS and its editing functions (spatial and tabular edits). Currently use of the database will be limited to a small number of staff members; however, future versions of this database may require modifications or new applications that do not require knowledge of GIS and its editing functions.

AD-3 Administrative tools for managing lookup tables will be provided.

AD-4 The initial application will allow users to only archive (not delete) records.

AD-5 The application will be developed to accommodate 2 spatial feature types: Lines, and Polygons. Only two feature classes will be used. There will not be separate feature classes for each species type. The use of query definitions will be used to provide species specific rendering in ArcMap.

2.8. Transaction Environment

TE-1 The application will directly work with SQL server for tabular data transactions.

TE-2 The application will directly work with ArcSDE for Spatial Data transactions.

TE-3 The application will work in any ArcSDE versioning environment. Users will be required to use the appropriate SDE connection to be within the database's configured transactional environment.

3. Data Requirements

3.1. Data Requirements

DR-1 The system shall use corporate data located on SQLUSR1 (database) as the default data source location, unless specified otherwise by the user.

DR-2 The user or system administrator shall be responsible for managing data in lookup tables in the Species Habitat Record Database.

DR-3 The database shall be stored in a SQL Server environment.

DR-4 The application must work with the database model specified in Appendix A.

DR-5 The following feature datasets will be required for the application to work properly:

Name	Description
WLA	Wildlife Area Spatial Database
REGAP	Regap Spatial Database
WSDM	WSDM Spatial Database
TAXO Database	Taxonomy Database
PHS	Priority Habitat and Species Spatial Database
Fish Distribution	Fish Distribution Spatial Database

4. Functional Requirements

The features listed below describe the functional requirements for the Species Habitat Management Application, Release 1.0. The priority of each feature is identified as either Mandatory or Highly Desired. Highly Desired requirements will be implemented only if they are deemed feasible in the design phase and fit within the project time and cost constraints. As an aid to understand the system functionalities, please consult the WDFW Species Habitat Data Model Description in ***Appendix C.***

4.1. Create Species Habitat Record (Prior to Field Work)

4.1.1. Description and Priority

This section describes the processes involved with the creation of new species habitat feature record in the Species Habitat Management Tool. Users will choose the species and related habitat information. (Mandatory)

4.1.2. Stimulus/Response Sequences

Stimulus: 1 User clicks on button to launch the Species Habitat Management Tool.
Response: The system will load a window form for data entry. The form will auto fill dropdown tools with data stored in application lookup tables.

Stimulus: 2 User initiates the application for the first time.
Response: The system will prompt the user to set the default values for Wildlife Area Unit, verification source and source type and method.

Stimulus: 3 User selects valid Species profile (a combination of population designation, behavior and life history information).
Response: The system creates a new species record and navigates the user to the selected WLA.

Stimulus: 5 The user is presented a create/edit form. The user defines the attributes of a new Species Habitat table record.
Response: The system will create and track the pending species habitat record in the database.

Stimulus: 6 The user creates a Species Habitat record prior to creating spatial data.
Response: The tool will create a new Species Habitat record without linked spatial data.

Stimulus: User may end session or move on to spatial data editing
Response: System will save all edits to species habitat data table and end edit session, or user continues to create spatial feature.

Stimulus: 7 User optionally creates a new spatial feature for the current edit record in ArcGIS environment, with PHS, WSDM, REGAP and/or other background layers turned on or off by user from within the ArcGIS platform
Response: The system enables the link button when a feature is selected that does not have a linked Species Habitat Id.

Stimulus: User queries existing spatial feature (previously digitized for another species) to adopt and or modify for active species record.
Response: The system will open a query page, zoom to image and enable cut, paste and edit functions.

Stimulus: 8	The user selects one or more spatial features and then links spatial data to the active species habitat record.
Response:	The tool will set the Species Habitat Record ID in the selected spatial features to the Species Habitat Record Id creating a linked relationship.
Stimulus: 9	The user unlinks selected spatial data to a species habitat record.
Response:	The tool will set the Species Habitat Record Id in the selected feature to zero (0) to unlink the spatial record with the Species Habitat Record.
Stimulus: 14	User edits the verification source of the Species Habitat Record.
Response:	The tool overrides the default value in the current record.
Stimulus:	The user selects all features involved with the creation of the species habitat polygon and clicks on the generate metadata tool.
Response:	The tool should run a process that uses the configuration found in the application to gather feature metadata information from the selected feature classes and stores this metadata information into the appropriate table.
Stimulus:	User chooses to “save current record and create a new one”, or “end session”.
Response:	If the choice is to save and create new record then the current record is saved and Stimulus 15. If user chooses to end the session then the current record is saved and Stimulus 16.
Stimulus: 15	User copies a current record.
Response:	The system will propagate all attribute values to the next record created. The verification flag get set to nothing. If verification default record is set, it will be referenced in the copied record.
Stimulus: 16	User clicks on the Create Session close button.
Response:	The system will save all edits in the species habitat table, feature classes, and related tables.

4.1.3. Functional Requirements

Create.Form	The tool shall provide an easy to use form for the attribution of a **species habitat record**. This form should be used for querying (section 4.3) and editing (section 4.2) functionality as well.
Create.Type.Selection	The tool shall allow the selection of Species in query/edit mode..
Create.Data.Type	The tool shall allow the creation of point, line or polygon features.
Create.Tools.Edit	The tool shall use the existing editing tools provided by ArcGIS Desktop.
Create.Tools.Add	The tool shall allow the user to create multiple feature types for a species habitat spatial record.
Create.Tools.Copy	The tool shall provide the functionality to import existing spatial data features into as new species habitat feature(s).
Create.Dates.Calendar	The tool shall provide a calendar control for the selection of date attribute information.
Create.Feature.Duplicate	The tool shall provide the ability to duplicate spatial and attribute data from one feature/record to a new feature/record.

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Create.Link.Assign	The tool shall allow the user to link multiple spatial features with a single species habitat.
Create.Link.Unassign	The tool shall allow the user to unlink spatial features that are linked with a **species habitat record**.
Create.Link.Tracking	The tool shall track the history of the linking and unlinking of spatial features to a species habitat record.
Create.Verification.Enable	The tool shall require the **verification source** (and if necessary names) be assigned whenever beginning and end dates, number of days, frequency and species classification are entered.
Create.Dropdown.Values	The tool shall automatically complete dropdown forms in the tool with values stored in application lookup tables.
Create.Creation.Date	The tool shall auto-populate the Creation Date field in the species habitat feature class.
Create.Creation.By	The tool shall auto-populate the Create By field in the **species habitat** tabular **records** and feature class. The name should be retrieved from the system user name.
Create.Modification.Date	The tool shall auto-populate the Modification Date field in the **species habitat** tabular **records** and feature class. This should be the same as the Creation Date field value when a feature is created.
Create.Modifcation.By	The tool shall auto-populate the Modification By field in the **species habitat** tabular **records** and feature class. This should be the same as the Creation By field value when a feature is created.
Create. Verification.Source	The tool shall auto-populate and/or provide functionality for the user to reference the verification source for a species habitat record.
Create.Manage.Links	The tool shall provide the user with the ability to identify records that do not have spatial features linked to a **species habitat record.**
Create.Manage.Display	The tool shall provide the user with the ability to see in the map frame spatial features that do not have **species habitat records** associated with them.
Create.Manage.Copy	The tool will provide an option to the user to copy attributes from the current record to a new record.
Create.Requirement.Attributes	The tool shall only allow the user to save and complete a **species habitat record** if all the “Required” attributes are completed.
Create.Metadata.Configuration	The tool shall gather metadata information from the layers specified in the configuration file.
Create.Metadata.Records	The tool shall post the selected feature information into the species habitat metadata table.

4.2. Edit Species Habitat Features

4.2.1. Description and Priority

This section describes the editing of Species Habitat records and features in the Species Habitat Management Tool. Edit/Create functionality found in the Create Species Habitat features (Section 4.1) will also be available in an edit mode. (Mandatory)

4.2.2. Stimulus/Response Sequences

Stimulus: 1 The user starts the application from ArcMap.
Response: The system loads the species habitat form. The application prompts the user if database and/or feature layers in the MXD document are not connecting properly.

Stimulus: 2 The user locates and sets the correct data paths for broken layer data sources.
Response: The application will connect and refresh the MXD with the correct data source paths.

Stimulus: 3 The user queries the Species Habitat database through the application form, by selecting the species type, WLA, and/or other fields in the form.
Response: The tool shall set the edit environment to the appropriate **Species Habitat** tabular **record** specified in the user's query, while displaying the form with the current selected record. In the event when more than one feature or record is selected, the form must provide a mechanism to navigate between records. The application will also navigate to the WLA specified in the query. If no WLA is selected, the map will not navigate to this location. User is prompted to update verification source information.

Stimulus: 4 The user queries for a **Species Habitat record** to edit using the dropdowns and textboxes provided in the form.
Response: The tool should provide tools for querying species habitat data and navigate to that query result. (See section 4.3) The tool should set the edit feature to the selected Species Habitat Feature Class type.

Stimulus: 5 The user reviews the unverified record list.
Response: The tool will display the current unverified records in a separate tool available in the Species Habitat Application.

Stimulus: The user reviews the unlinked record list.
Response: The tool will display the current unlinked records in a separate tool available in the Species Habitat Application.

Stimulus: 6 The user verifies the **Species Habitat record** by clicking on a checkbox.
Response: The system sets the Species Habitat record **verification** field to true.

Stimulus: 7 The user uses a standardized form to edit feature attribution.
Response: The tool should allow the editing of a selected **Species Habitat record** attribute data in a standard form.

Stimulus: User manually turns on WSDM, PHS. REGAP layer for the species
Response The tool displays selected REGAP layer as a background

Stimulus: 8 The user selects the option to digitize a spatial feature using spatial tools to create the spatial features of the **Species Habitat record**.
Response: The tool should activate the ArcGIS Editing tools for the user, select the

appropriate feature class type, and start the edit session. in ArcGIS environment, with PHS, WSDM other background layers turned on or off by user from within the ArcGIS platform

Stimulus: User hits the link button
Response: Species Habitat Record ID is saved with spatial data

Stimulus: The user selects all features involved with the creation of the species habitat polygon and clicks on the generate metadata tool.
Response: The tool should run a process that uses the configuration found in the application to gather feature metadata information from the selected feature classes and stores this metadata information into the appropriate table.

4.2.3. Functional Requirements

Edit.Verify.Status	The tool shall provide the user a list of records that have not been verified.
Edit.Verify.Linked	The tool shall provide the user with a list of spatial features that have not been linked.
Edit.Functionality.Other	The tool shall provide the same functionality found in the create feature functionality. (Specifically the functionalities found in Section 4.1.3)
Edit.Form.Functionality	The tool shall allow the user to perform edits in the same form as adding and querying data.
Edit.Select.Spatially	The system shall provide the user with the ability to select species habitat features through a spatial enabled user interface.
Edit.Select.Attribute	The tool shall provide the user with a method to select a species habitat feature based upon its linked attribute values.
Edit.Modification.Date	The tool shall auto-populate the Modification Date field in the **species habitat record**.
Edit.Modifcation.By	The tool shall auto-populate the Modification By field in the **species habitat record**.
Edit.Metadata.Configuration	The tool shall gather metadata information from the layers specified in the configuration file.
Edit.Metadata.Records	The tool shall post the selected feature information into the species habitat metadata table.

4.3. Query Species Habitat Features

4.3.1. Description and Priority

This section describes the query functionality required by the Species Habitat Management Tool. (Mandatory)

4.3.2. Stimulus/Response Sequences

Stimulus: $_1$ The user selects values in the edit form.
Response: The system will automatically filter the Species Habitat feature database with values selected by the user.

Stimulus: $_2$ The user uses the location query tool to query data.
Response: The system will automatically filter the Species Habitat form with the selected

features.

Stimulus: 3 The user may use the ArcGIS attribute query tool to query data.
Response: The system will automatically filter the Species Habitat form with the selected features.

Stimulus: 4 The user uses the ArcGIS spatial selection tool to query data.
Response: The system will automatically filter the Species Habitat form with the selected features.

Stimulus: 5 The user selects more than one feature or Species Habitat record.
Response: The tool should provide basic VCR style record navigation. (See section 4.3)

Stimulus: 6 The user chooses a different species type in the edit window.
Response: The tool should query and display the newly selected species type for all layers with species code values.

4.3.3. Functional Requirements

Query.Form.Functionality	The tool shall allow the user to perform queries in the same form used to create and edit data.
Query.Controls.Query	The tool shall perform a query of the species habitat data when a user selects a value from a dropdown list and when a user enters a value in a text box and then clicks on the query button.
Query.Controls.Navigation	The tool shall provide controls that provide the navigation of a selected set of records.
Query.Controls.Feature	The tool shall zoom to and highlight the current species habitat record displayed in the query/edit form if linked to spatial data and will prompt user when the species habitat record is not linked to any spatial data.

4.4. Delete/Archive Species Habitat Features

4.4.1. Description and Priority

This section describes the deletion/archiving processes involved with the Species Habitat Management Tool. For budget purposes, the tool will only provide archiving functionality. (Mandatory)

4.4.2. Stimulus/Response Sequences

Stimulus: 1 The user clicks on a button to delete a record.
Response: The system shall set the archive flag for the Species Habitat record, archives the associations, and archives the linked spatial features. The result will be to prevent the record/feature from drawing or being captured by spatial and tabular queries.

Stimulus: 2 The user deletes spatial feature during an edit session.
Response: The system will set the archive flag for the spatial feature. The result will be to prevent the feature from drawing or being captured by spatial and tabular queries.

4.4.3. Functional Requirements

Delete.Feature.Archive	The tool shall change the archive field in the Species Habitat Feature and species habitat records to TRUE.
Delete.Feature.Definition	All Feature Layers shall have a Definition Query setup with the Archive set to FALSE.
Delete.Feature.Unarchive	The tool shall allow the unarchiving of Species Habitat records that meet specified criteria (i.e. not a mistake).

4.5. Navigation Features

4.5.1. Description and Priority

This section describes the navigation features provided with the Species Habitat Management Tool. Mandatory)

4.5.2. Stimulus/Response Sequences

Stimulus:$_1$	The user navigates the map with spatial navigation tools.
Response:	The system will provide basic zoom and navigation tools found in ArcMap.
Stimulus:$_2$	The user navigates to features through the Attribute Form.
Response:	The system will query and navigate to the queried feature. (See section4.3.2).

4.5.3 Functional Requirements

Navigate.Map.Tools	The tool shall provide access to basic navigation tools found in ArcGIS.
Navigate.Map.Query	The tool shall provide map navigation to select spatial features when a query is performed in the edit form.

4.6. Disconnect Species Habitat Geodatabase

4.6.1. Description and Priority

This section describes the functionality of creating a “disconnected” Species Habitat Geodatabase for field use. The tool should provide a disconnected Geodatabase, application specific database tables, and ArcGIS Map Document. (Mandatory)

4.6.2. Stimulus/Response Sequences

Stimulus:$_1$	User clicks on button to create a disconnected database.
Response:	The system will prompt the user for the file directory location of the exported database.
Stimulus:$_2$	User provides a name for the exported project.
Response:	The system will create a folder in the selected file directory with the name specified by the user.
Stimulus:$_3$	User selects the location and clicks ok.
Response:	The system will run processes that will generate a disconnected environment of the Species Habitat Management tool based on the visual extent of the map displayed in ArcGIS.

4.6.3. Functional Requirements

Disconnect.Location.Directory	The tool shall prompt the user for the output directory.
Disconnect.Location.Folders	The tool shall create a new folder in the output directory. The directory will have the name specified by the user as well as a date stamp. (ex. MYPROJECT_041007)
Disconnect.Data.Geodatabase	The tool shall create a copy of the Geodatabase data in a personal Geodatabase in the output folder location.
Disconnect.Data.OtherTables	The tool shall copy the primary and lookup tables in the Species Habitat database to the disconnected database.
Disconnect.Data.BaseData	The tools will not clip or select out base data provided in the ArcGIS Map Document that is not part of the Species Habitat Database. The user will be responsible for acquiring and copying base GIS data to the field work machine.
Disconnect.Data.Taxonomy	The tool will export out the Taxonomy View Table from the database.
Disconnect.Data.Imagery	The user shall be responsible for acquiring and copying imagery (aerial photos) to the project directory.
Disconnect.Map.Document	The tool shall make a copy of the ArcGIS Map Document to the folder.
Disconnect.Map.Connections	The user shall reconnect map layers to the appropriate location of the disconnected data.
Disconnect.Date.CheckedOut	The tool shall track the checkout date when the database has been disconnected.

4.7. Reconnect Species Habitat Geodatabase

4.7.1. Description and Priority

This section describes the import process of data collected in a disconnected environment. (Mandatory)

4.7.2. Stimulus/Response Sequences

Stimulus:$_1$	User clicks on button to reconnect the disconnected database to the enterprise Species Habitat Database.
Response:	The system will prompt the user for the location of the disconnected project.
Stimulus:$_2$	User selects the disconnected project directory.
Response:	The system will start the import process and prompt the user when complete.
Stimulus:$_3$	When the system detects identical record IDs with different modification dates in spatial and/or tabular records, the user will be prompted to reconcile the modified records.
Response:	The system will post the selected data by the user to the enterprise database.

4.7.3. Functional Requirements

Reconnect.Folder.Location	The tool should prompt the user for the location of the disconnected database.
Reconnect.Data.Import	The tool shall import any record that has been modified in the disconnected database.

Reconnect.Data.Reconcile	The tool shall prompt the user when a record ID in the disconnected database and enterprise database has been modified. (see comment above in Stimulus: 3)
Reconnect.Data. ID s	The tool should reconcile the IDs stored in the disconnected database with the IDs in the enterprise database.
Reconnect.Data.Tables	The tool will reconcile all table data from the disconnected database. This includes lookup and relationship tables.
Reconnect.Data.Obsolete	The tool will reconcile data that has been flagged obsolete (no previous mention of this term) this needs more discussion in section 4.4.
Reconnect.Data.Spatial	The tool will import all modified spatial features into the enterprise Geodatabase. Spatial data will be reconciled the same as tabular records.
Reconnect.Document.Maps	The tool will post a copy of the traveling or portable MXD to the system for the user to use. It is expected that the MXD will contain graphics/digital links collected in the field.

4.8. Lookup Table Management

4.8.1. Description and Priority

This section describes the management of lookup tables in the database. (Mandatory)

4.8.2. Stimulus/Response Sequences

Stimulus:$_1$	The user clicks on the lookup management interface button.
Response:	The system will load a lookup table editing form.
Stimulus:$_2$	The user selects from a list the lookup table to modify.
Response:	The system will load the appropriate lookup table into an edit form.
Stimulus:$_3$	The user edits the lookup values in the form (Add/Modify).
Response:	The system will modify the lookup table information.
Stimulus:$_4$	The user attempts to obsolete a lookup value.
Response:	The system will query the database for instances of the lookup value in use. If found, the obsolete request will not be allowed.

4.8.3. Functional Requirements

Lookup.Form.Edit	The tool shall provide a form for the editing of lookup table records.
Lookup.Record.Obsolete	The tool shall query the database for instances of the lookup value in use. If found, the obsolete request will not be allowed.
Lookup.Modification.Config	The tool shall provide a configuration file which will control the access of modification of lookup tables.

5. Non-functional Requirements

5.1. User Interfaces

UI-1 The user interface design shall follow .NET Coding Standards and Windows User Interface Guidelines.

UI-2 The user interface design shall incorporate basic Windows Functions and Standards.

UI-3 The interface should be developed to work on a minimum screen resolution of 1280x1024.

UI-4 The interface must interact with the ArcGIS desktop as a dockable window.

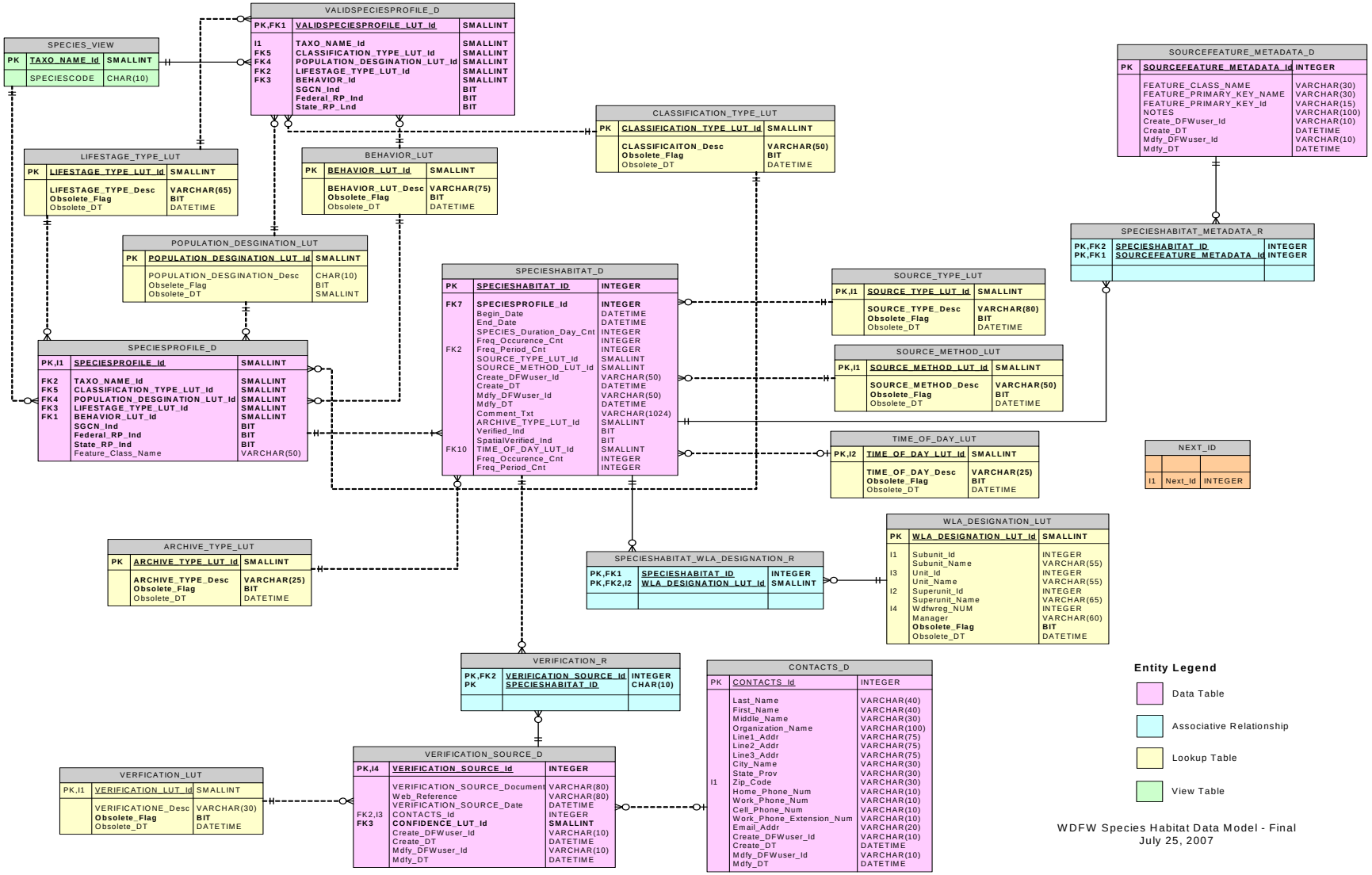
5.2. Performance Requirements

PR-1 Must meet standard DFW application performance standards.

PR-2 Must work within the operating parameters of ArcGIS.

Appendix A: Physical Database Model

The application will use the following tables as per the following Physical Database model. Please refer to the Visio Document and Access Database provided with this document.



Appendix B: Requirements Identifiers

The following is a key to the codes that uniquely identify the requirements, except for the functional requirements in section 4 of the document.

AD Assumptions and Dependencies
CO Design and Implementation Constraint
DR Data Requirements
UD User Documentation
OE Operating Environment
PR Performance Requirement
QA Quality Attribute
UI User Interfaces

Appendix C: Species. Habitat Data Model Description

Description of the WDFW Species Habitat Data Model

"Everybody gotta be somewhere" an old saying goes. Many different species occur on WDFW owned and managed lands. Individuals of these species can be one of several different life stages: adult, immature, sub-adult, alevin, egg, fry, pupae etc. However individuals of each species will only inhabit areas suitable to support their life. Some of these habitats are quite rare and may even be critical to species survival. Others may be common and found widely. To address these differences, species habitat may be tagged with one of several subclass designations including: critical, current, potential, recovery target, and historic.

Species are assigned a legal status by governing agencies. Federal status includes: endangered, threatened, candidate, proposed and species of concern. State status includes: endangered, threatened, candidate and sensitive. Currently most species included in the current assessments have one or both of these designations; however some may be included that do not have the designations and the data model will need to accommodate that.

A species may always be present, may be a rare visitor, or something between. It might occur on either a regular or periodic basis, within a calendar year or across many years. Each species event record will have a Calendar start and end date, such as June 15th to September 1st. The duration of species presence is the number of days that each species event occurs. For the above example the duration would be 77 days. How often a species is present is given as a frequency of annual reoccurrence, such as one in ten years.

Information about which species are present, and when and where they are found, is gathered from many of sources using a variety of data collection methods and procedures. Not all sources are equal some may be more reliable than others. Each source may have some combination of a named individual, document name, web reference, date, and contact information. Each source will be given a Verification tag to help assess the basis used to include the species and it's habitat. The Verification tag will be one of these: Observation, expert opinion, best professional judgment, and modeled data.

It is important to know each Wildlife Area used by a valid species and which portions contain habitat. Therefore valid species habitat will be described within a WDFW administrative area. The designations will be hierarchical, rolling up from Wildlife Area Unit to Wildlife Area to Wildlife Area Complex and finally to Region.

Each species habitat will be managed as both tabular data and spatial data. One requirement is that the system supports creating tabular records for species independent of the process of creating the spatial data that must be linked to the species habitat polygons. This will permit creation of a placeholder that will be verified or corrected during WLA field visits.

In order to reduce application development cost, a strategy has been identified for managing records that are no longer needed due to a change in information, methods, or mistakes. This application deals with both tabular and spatial data that is linked through an application assigned primary key, which is carried in both the tabular and spatial records. It would be costly to develop an application that manages deletions of both the tabular and spatial data. Not to mention that features could be deleted outside the application. Each record in the species habitat table will be attributed with an archival state (e.g. Not Archived, Archived with Delete, Archived, etc). This level of attribution will enhance a reviewer's understanding of the reason for making a record inactive.

At beginning of a session (when the application is first initiated) a user will be prompted to set default options for verification and methods sources.

Inventory sessions will occur in the field and be disconnected from the SOL database. The application and the tabular and spatial records will be "checked out" to the inventory biologist and used on a laptop. While data is "checked out" that particular data on the SOL database will be editable. When data is "checked in" the application will need to: 1) reconcile and update the SOL database with new additions to look up tables that may have occurred when disconnected, and 2) reconcile and update any new and/or modified activities records.

Appendix D: Issues List

#	Description	Due Date	Assigned To

Appendix E: Document Sign Off

The sign off of this document indicates that the Washington Department of Fish and Wildlife has agreed with described Software Requirements Specification in relation to the Wildlife Areas Habitat Conservation Plan project and approves of GeoNorth to start the development of software Design Specification for the Species Habitat application.

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Jennifer Quan, WADFW Date